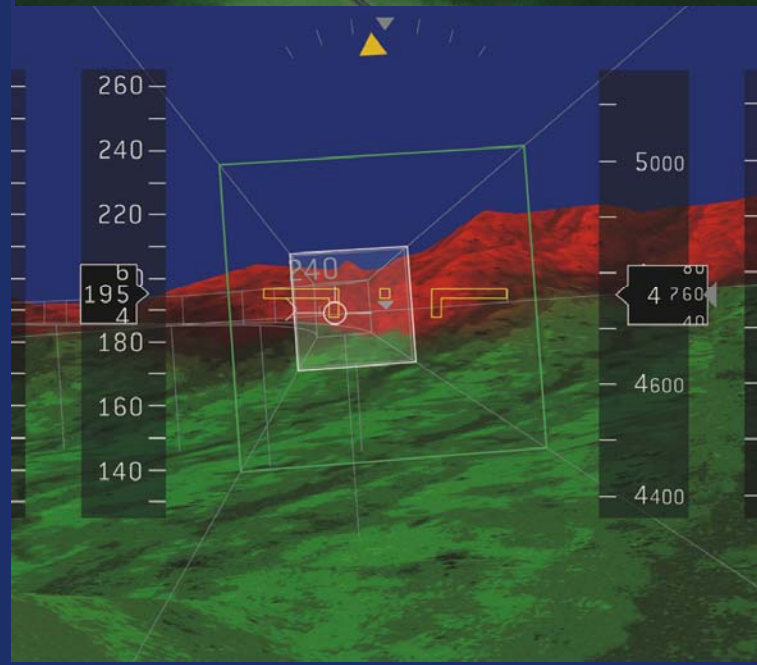
Part 23 Policy Update

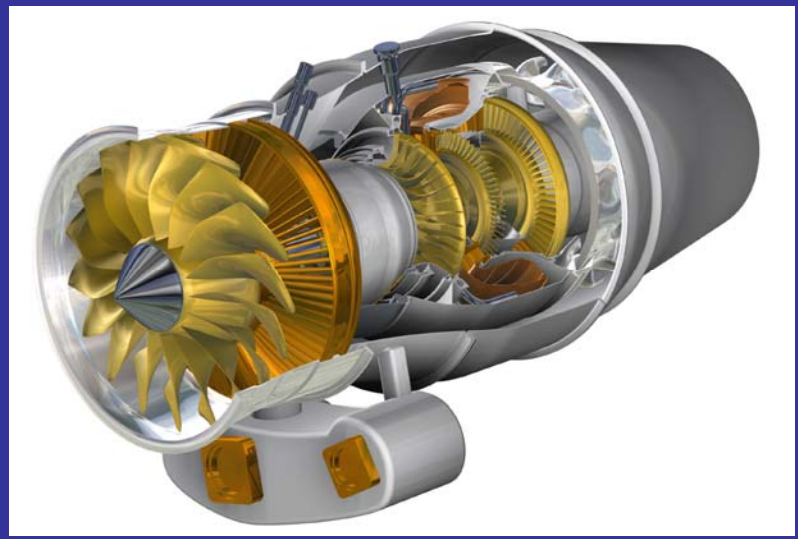
Flight Test



Presentation to: FTW DER Conference
Name: Peter L. Rouse
Date: May 25,2006

Presentation Overview

- Small Jet History / Philosophy
- Small Jet Rulemaking Attempt
- Small Jet Projects
- New Systems Policy



Part 23 Jet History / Philosophy

- Prior to adoption of commuter category
- Early programs adopted pre-amendment 42, part 25 requirements for subpart B and G
- We get better single engine performance and balanced field length in exchange for relaxed flight characteristics
- Since the adoption of the commuter category we have tried to use part 23 to replace the old part 25 requirements so that we can use part 23 flight characteristics

Current Small Jet Approach

- Directorate hosted a flight test meeting back around the turn of the century to discuss future of small part 23 jets
- Conclusion for subpart B and G:
  - Under 6000 pounds = normal category requirements
  - Over 6000 pounds = commuter category
- Rational provided for increased safety:
  - Promoting the small jets over small recips twins
  - Part 23 turbine now requires guaranteed performance
  - Expected new generation of avionics
  - Required training

Rulemaking Efforts – Small Jets

Background

- Order 1110.135 established the Part 135/125 Aviation Rulemaking Committee (ARC)
- The ARC tasked a working group to review part 23 for small jets – the group reviewed normal and commuter category rules
- Working group determined that jets under 12,500 lbs use part 23 with typically applied special conditions folded in
- Working group determined jets between 12,500 and 19,000 pounds use commuter category rules

Current Jet Activities

- At least 12 new certification programs planned for '06-'07
- No less than 10 others in the planning stage
- Jet Rules being worked to incorporate lessons learned

Cessna Citation

Lear 23

Raytheon 390

Adam 700

Sino SJ30-2

Cessna Mustang

Eclipse 500

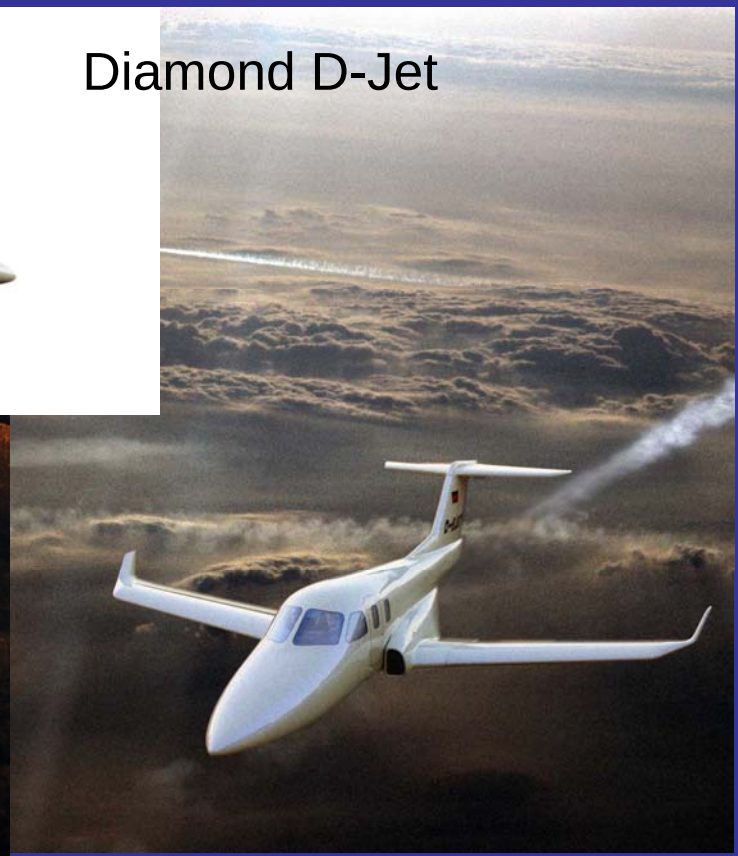
Small Jet Projects

Eclipse

Mustang

Small Jet Projects

Diamond D-Jet



Small Jet Projects

Embraer Light Jet (300) and Very Light Jet (100)

Small Jet Projects

- Cockpit Mock-up for both the models 100 and 300
- Cabin Mock-up for model 100
- Cabin for 300 includes an additional row of seats

Small Jet Projects

Grob SPn Utility Jet

Small Jet Projects

ATG Javelin

New Policy

2005

- ACE-05-04,1-G Stall Speed
- PS-ANE-2003-35-1-R0, Propeller Ice Protection Equipment

2006

- No new requirements for inflight engine starting for single engine airplanes

New Policy

Compliance with §23.903(f), Restart Envelope, “One way, but not the only way….”

New Environmental Policy - 23.1301- 23.1309

The guidance -

- allows the depth of the environmental qualification to be commensurate with the severity of the hazard
- It is based on the five failure condition classifications defined in AC 23.1309-1C ranging from no safety effect to catastrophic
- should reduce the amount of environmental qualification, especially for equipment that has no safety effect and equipment that has only minor failure conditions

High voltage systems (HID Lights, etc) can be a source of EMI and may need to be tested to a higher environmental levels or EMI

New Guidance – GAMA Doc #12

“GAMA Class” cockpit

- Meant to streamline certification
- Establishes a baseline for all new part 23 displays – PFD & MFD
- Defines field-of-view for many items
- Leaves creative freedom, but states minimum standard
- Glass to Glass transition easier

New Policy - Synthetic Vision AC

Brief Overview of the Topics Addressed in the AC

- Intended Function
- Synthetic Terrain/Vision Imagery
- Terrain Alert System – not necessarily TAWS
- Airplane Reference Relative to Terrain
- Heading Integrity
- Horizon Line
- Moving Map that Corresponds to and Compliments the SV PFD Display
- Failure Modes

New Policy - Synthetic Vision AC

- Terrain Color and Depiction
- Minimums Audio Callout Capability
- Cultural Features
- Terrain Resolution
- Terrain Database Integrity
- Display Update Rates
- Aircraft Flight Manual Supplement
- Unusual Attitude Recovery

New Policy - Synthetic Vision AC

Specific Guidance For Pathway Displays

- **Pathway Lateral and Vertical Limits**
- **Precision Approach Guidance**
- **Pathways and Terrain**

Test and Evaluation Methods and Criteria for Compliance

Approved Synthetic Terrain / Vision

Universal's Vision 1

PFD NORMAL FORMAT DISPLAY

Federal Aviation Administration

Approved Synthetic Terrain / Vision

Chelton Flight Systems

New Policy - Synthetic Vision AC

Conventional Display

Instrument Conditions Outside View

New Version of Conventional Display

Synthetic Vision Display

New Policy - Synthetic Vision AC

Conventional Display

Visual Conditions Outside View

New Version of Conventional Display

Synthetic Vision Display

New Policy - Synthetic Vision AC

Simulated CAT III Approach

New Policy - FADEC

- **Question: How Do I Install It?**
  - The EEC is first certified on the 14 CFR part 33 engine through a Supplemental Type Certificate (STC) or Amended Type Certificate (ATC) process.
  - The EEC is then installed and certified on the 14 CFR part 23 certificated airplane using the Supplemental Type Certificate (STC) or Amended Type Certificate (ATC) process.
- **Answer: A Supplemental, Amended, or New Type Certificate (New Aircraft)**

Policy – Additional Issues

AC 23.1309-1C Figure 2 Showing Classes of Airplanes :

- Already provided relaxation from the old requirements of AC 23.1309-1B
- Design assurance levels are shown
- Probability values are shown
- The design assurance levels are for software and complex hardware – not for lightning and HIRF

New Technology – Safety is Selling…Finally

Obstacle Databases Are A Good Thing

Things you don't see everyday in aviation…

Ford
"Non-Lifting Body"
Launch Test

And finally, from the “How I Lost My Job” files…

Questions?